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ABSTRACT

The status of science and social studies education in rural schools seems marginal. This study collected information on the issue by an interview survey. Nine public schools that enrolled 6th, 7th, and 8th grade students in rural northeast Alabama and northwest Georgia were randomly selected for the study. The principal, librarian, a science teacher, and a social studies teacher at each school were interviewed. Most of the social studies and science teachers stated that the purpose of teaching their subject was to enable students to understand the world so they could act upon it. Traditional techniques, such as lecture, discussion, individual assignments, and tests or quizzes were the most frequently used. Techniques that were seldom or never used before included programmed instruction, computer-assisted instruction, simulations, role plays, debates, panels, field trips, and guest speakers. The videocassette recorder was the most frequently used piece of instructional media equipment. Teachers, especially science teachers, were dissatisfied with the physical resources available for instructional support. Surveyed teachers mainly relied on local resources for professional development. Improving rural education may involve more appropriate curricula that take advantage of resources found in local communities. This report contains tables illustrating the use of classroom techniques by science and social studies teachers. (LP)

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The Status of Science and Social Studies Education in Selected Rural Schools of Northeast Alabama and Northwest Georgia

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The Status of Science and Social Studies Education in Selected Rural Schools of Northeast Alabama and Northwest Georgia

Statement of the Problem

The purpose of the study was to determine the status of science and social studies education in selected rural schools of northeast Alabama and northwest Georgia. The investigators sought to identify the goals, methods, and instructional media used in sixth, seventh, and eighth grade science and social studies classes.

Background of the Study

During the 1976-77 school year, Stake and Easley (1978) directed a National Science Foundation study of science, mathematics, and social science teaching and learning in American public schools. Eleven high schools and their feeder schools were selected for field observations in the study entitled Case Studies in Science Education (CSSE). The schools were chosen to represent the nation in terms of region, socioeconomic status, race, and degree of educational innovation. Two of the schools, BRT and Pine City (both pseudonyms), were rural.

BRT (Peshkin, 1976) was a consolidated school district in rural Illinois. In 1976-77 the high school had 136 students in four grades. The football team won its second consecutive conference championship. Honors had also come

to the school for the quality of science papers and science projects entered in competition. BRT had a declining birth rate and further school consolidation appeared imminent.

BRT High School had only one science teacher, one mathematics teacher, and one social studies teacher. Peshkin observed that science, mathematics, and social studies held different statuses at the high school level. The high school required only one year of math and social studies, but two years of science. Social studies was held in lowest esteem by parents, board members, teachers, and the guidance counselor. Some interviewees attributed the low status of social studies to the social sophistication of students and the long history in the school of combining coaching and social studies teaching. The social studies teacher, "Mrs. F.," taught five periods per day and had four different preparations. "Mrs. F." was in her ninth year of teaching at BRT, having returned to teaching following a 10-year period of tending to her home, her husband, and three sons. English was her major subject and she had not taught social studies, her minor, for the previous five years. Math, on the other hand, was perceived as related to vocational needs--a basic subject--and was taught and emphasized at every grade through the ninth. Science, according to Peshkin, was held in the highest esteem. It seemed "to possess an aura of favor, acceptance, and

responsiveness to it greater than that of other subjects" (p. 5).

Pine City (Walker, 1977) was a city of about 9,000 inhabitants in rural Alabama. Seventy-five percent of the students were bused into Pine City from the surrounding country. Eighty percent of the students received free lunch. The racial composition of the student bodies in the city schools ranged from 32 to 64 percent black.

Walker focused his attention on science and mathematics education in Pine City's two high schools. He did not report on the status of social studies in the district. In seven weeks of close observation, the researcher did not see microscopes, circuit boards, or bunsen burners in use, but he saw lots of textbooks. He stated,

> The one science teaching resource that seems in abundance is the textbook. The books look new and expensive, in marked contrast to the laboratory equipment and the classroom furniture. The libraries have interesting sections of science and science-related books, and schools receive regular copies of the magazine Current Science. (p.14)

He summarized science education in Pine City in the following words:

> To the curriculum analyst visiting the schools, the science courses would not appear exceptional, but they are conscientiously taught by popular teachers. Despite the reputation they have for being difficult courses, science and math attract growing numbers of students. The observer would probably notice, though, that for the most part science is taught in

> classrooms by people who see their role as teachers who happen to teach science, rather than as active members of the scientific community who happen to teach. (p. 14)

Welch and Wagner (1989) found that 13 and 17-year-old students living in rural America had "fewer opportunities to learn science both in class and through informal or out-of-school activities" (p. 7). The discrepancy was "particularly noteworthy for 13-year-old students" (p. 7). Despite their apparent disadvantage, however, rural students learned nearly as much science content as students in larger cities, according to the National Assessment of Educational Progress data analyzed by Welch and Wagner.

A National Science Foundation study of science, mathematics, and social studies education (Weiss, 1978) included 268 rural schools. Teachers in 42 percent of those schools reported using materials from at least one of the federally-funded curriculum projects in science, mathematics, and social science conducted during the 1960's and early 1970's. That compared with 29 percent of urban schools and 54 percent of suburban schools. Of the rural teachers of grades 7-9 surveyed, 21 percent had attended one or more NSF institutes in science, mathematics, or social science education. Twenty-three percent of the rural teachers of grades 10-12 had attended at least one of the institutes. Among the tenth through twelfth grade teachers in the study, significantly fewer rural teachers had

participated in NSF institutes than teachers from small cities, suburbs, and cities of 50,000 people or more. Suburban schools were the best equipped for teaching science, followed by urban schools. Rural schools were the least well-equipped for science.

In 1985-86 Weiss (1987) replicated parts of her earlier study (1978) in order to update information on the status of science and mathematics education. Unlike her previous survey, however, social studies was omitted and no schools were identified as rural. Thus, we set out to obtain information on the status of social studies and science education in rural schools near our offices at Jacksonville State University in northeast Alabama. We expected to find little difference between the kinds of social studies and science experiences provided to students in our area today and those provided to other rural students in the mid 1970s.

Methodology

The purpose of the study was to determine the status of science and social studies education in selected rural schools of northeast Alabama and northwest Georgia. The population studied was public schools that enrolled 6th, 7th, and 8th grade students in rural communities of under 2,500 persons located in Alabama and Georgia counties within a 40-mile radius of Jacksonville State University. (See Figure 1.) The following Alabama counties were included: Calhoun, Cherokee, Clay, Cleburne, Etowah, DeKalb, Randolph,

Figure 1. Counties included in the study.

St. Clair, and Talledega. The following Georgia counties were also included: Carroll, Chattooga, Floyd, Haralson, Heard, and Polk. We used 1980 United States Census data (Bureau of the Census, 1981a, 1981b) to identify communities in the 15 counties with less than 2,500 people. Using the CIC's School Directory (1987a, 1987b) and official Alabama and Georgia highway maps, we identified 36 schools which met our criteria and were no closer than five miles from the geographic center of any incorporated city of 10,000 or more people. No schools appropriate for our study were located in Etowah County, Alabama, or Floyd and Polk Counties in Georgia.

The researchers randomly selected nine schools (25 percent of the 36 schools) and three other schools to be included if we were not able to gather data from any of the first nine selected. In February 1991 by letter and telephone, we contacted the school superintendents who had jurisdiction over the nine schools seeking permission to conduct our study. In that process we learned that two of the schools had been reorganized since 1987 and no longer had grades six, seven, and eight. One superintendent refused to grant permission. Therefore, we sought and obtained access to the three schools on our randomly selected list of alternates. In the spring of 1991 we then collected data from the principal, the librarian, a science teacher, and a social studies teacher at each school, using

interview schedules adapted from questionnaires developed by the Research Triangle Institute (Weiss, 1978). The teachers were randomly selected from a list of eligible teachers that was provided by the principal prior to the site visit. In all, 43 teachers were eligible at the nine schools.

Description of the Data

Nine social studies teachers, nine science teachers, nine school principals, and nine library/media specialists were interviewed for this study. Of the science teachers, three taught sixth grade, one taught seventh grade, and five taught eighth grade. Three social studies teachers taught sixth grade, two taught seventh grade, and four taught eighth grade. The average class size in both subjects was 25.

The principals and library/media specialists were interviewed to obtain general information about the social studies and science programs in grades 6-8 and to verify the representativeness of the teacher sample. Data gathered from principals and library/media specialists are not reported in tables, but are cited where it is appropriate to do so.

Methods of Instruction

Lecture and discussion were the teaching techniques most frequently used by social studies teachers (See Table 1.). Social studies teachers also relied heavily on individual assignments and tests or quizzes. None of the

social studies teachers interviewed used programmed instruction and only one used computer-assisted instruction to a limited extent (less than once per month). Two-thirds of the social studies teachers had their students do reports or projects on a monthly or weekly basis. About three-fourths of them said their students used hands-on manipulative materials monthly or weekly. Eight of the nine social studies teachers surveyed used simulation, role play, debate, or panel discussions occasionally, about one-third of them did so at least monthly. Social studies teachers employed field trips, excursions, and guest speakers sometimes, but none of our sample did so as frequently as once a month. Two-thirds of them, however, did teacher demonstrations monthly or weekly.

Science teachers, also, (See Table 2.) used lecture and discussion heavily with all of them saying they held discussions just about daily. Over three-fourths of them used tests or quizzes at least weekly. All of them gave teacher demonstrations at least monthly. Eight of the nine science teachers interviewed said their students used manipulative or laboratory materials monthly or weekly. At least two-thirds of the science teachers occasionally used field trips, excursions, or guest speakers, but none said they had done so as often as monthly. Only one-third of the science teachers used simulation, role play, debate, or

Table 1

Percentages of Social Studies Teachers Who Used Various Teaching Techniques

Teaching techniques	Never	Less than once per month	At least once per month	At least once per week	Just about daily
Lecture	0%	0%	0%	22%	78%
Discussion	0%	0%	0%	22%	78%
Student reports or projects	0%	33%	44%	22%	0%
Library work	0%	44%	33%	22%	0%
Students working at chalkboard	78%	11%	11%	0%	0%
Individual assignments	0%	11%	22%	44%	22%
Students using hands-on manipulative or laboratory materials	11%	11%	33%	44%	0%
Televised instruction	22%	22%	44%	0%	11%
Programmed instruction	100%	0%	0%	0%	0%
Computer-assisted instruction	89%	11%	0%	0%	0%
Tests or quizzes	0%	0%	33%	67%	0%
Contracts	89%	0%	0%	11%	0%
Simulation, role play, debate, panels	11%	56%	33%	0%	0%
Field trips, excursions	33%	67%	0%	0%	0%
Guest speakers	22%	78%	0%	0%	0%
Teacher demonstrations	11%	22%	44%	22%	0%

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Table 2

Percentages of Science Teachers Who Used Various Teaching Techniques

Teaching techniques	Never	Less than once per month	At least once per month	At least once per week	Just about daily
Lecture	0%	0%	22%	22%	56%
Discussion	0%	0%	0%	0%	100%
Student reports or projects	11%	33%	33%	22%	0%
Library work	11%	56%	22%	11%	0%
Students working at chalkboard	56%	44%	0%	0%	0%
Individual assignments	0%	11%	11%	22%	56%
Students using hands-on manipulative or laboratory materials	0%	11%	44%	44%	0%
Televised instruction	11%	56%	11%	22%	0%
Programmed instruction	100%	0%	0%	0%	0%
Computer-assisted instruction	67%	22%	11%	0%	0%
Tests or quizzes	0%	0%	22%	56%	22%
Contracts	78%	22%	0%	0%	0%
Simulation, role play, debate, panels	67%	22%	11%	0%	0%
Field trips, excursions	44%	44%	11%	0%	0%
Guest speakers	22%	78%	0%	0%	0%
Teacher demonstrations	0%	0%	56%	33%	11%

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panel discussions even occasionally. Five of the science teachers sometimes used field trips or excursions, but only one did so as often as once a month. None of the science teachers in our sample had guest speakers as often as monthly, but seven of them said they occasionally had guest speakers.

A few of the social studies teachers in this study provided opportunities for their students to study their own communities. The majority of them, however, seldom or never did so. The percentages of social studies teachers whose classes were involved in study of the local community and the types of learning activities used are presented in Table 3. At least one-third of the teachers said they used oral history, photography, or local history activities at least occasionally. However, only one social studies teacher in nine frequently provided oral history, photography, or community service projects as approaches to community studies.

Over two-thirds of the science teachers interviewed indicated their classes were involved in environmental studies. The teachers' responses to questions about sites used for environmental studies are tabulated in Table 4. Two-thirds of the teachers used the school site and one-third used private property owned by individuals (not corporations) as locations for environmental studies. One

Table 3

Percentages of Social Studies Teachers Whose Classes Were Involved in Study of the Local Community

Types of learning activities	Percent of respondents			
	Never	Seldom	Occasionally	Frequently
Oral history	44%	22%	22%	11%
Visual experiences (photography)	44%	11%	33%	11%
Community service projects	56%	11%	11%	11%
Community surveys	78%	11%	11%	0%
Local history	44%	11%	44%	0%

Table 4

Percentages of Science Teachers Whose Classes Were Involved in Environmental Studies

Locations used for environmental studies	Percent of Respondents
School site	67%
State property	11%
Private property belonging to citizens	33%
Private property belonging to a business or corporation	11%
None; class not involved in environmental studies	22%

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out of nine teachers used state property or corporation-owned property.

Instructional Media

All of the teachers interviewed in this study used textbooks. The data in Tables 5 and 6 indicate the frequency with which they used accompanying materials offered by the publishers of their texts.

More than three-fourths of the social studies teachers and about 90 percent of the science teachers said they used the teacher's manual more than 50 days per year. Two-thirds of the social studies teachers and about 90 percent of the science teachers reported using textbook publishers' test materials to some extent. Eight of the nine science teachers interviewed said they used such test materials at least 10 days per year while only three of the nine social studies teachers indicated usage that high.

Two-thirds of the social studies teachers and one-third of the science teachers said they used student workbooks from their textbook publishers at least 10 days per year. Four of the nine science teachers, however, said that a workbook was needed but not available to them. About 90 percent of the science teachers and 80 percent of the social studies teachers said they sometimes used publisher-provided audiovisual materials and one of the social studies teachers indicated that such materials were needed but not available. One-third of the teachers in both subject areas said they

used hands-on or manipulative materials from their textbook publishers, but five of the nine science teachers and two of the nine social studies teachers said those materials were needed but not available to them. Several teachers (four social studies and five science) also said that they needed activity cards to accompany their textbooks, but that none were available to them.

Two of the nine science teachers reported using publisher-provided microslides. Four of them said they did not need microslides from the publisher while three said they were needed but not available to them.

We asked teachers about their use of audiovisual materials and equipment in their classes. Their responses have been tabulated in Tables 7 and 8.

Seven out of nine social studies teachers and eight of nine science teachers said they did not use or need to use films. All of the teachers surveyed, however, indicated they used a videotape recorder/player at least occasionally, two-thirds of them monthly or weekly. Fewer of them used standard (over airwaves) television or closed-circuit television. None of the teachers used eight millimeter film loops. Four of the nine social studies teachers and two of the nine science teachers reported using filmstrips at least once a month. One-third of the social studies teachers and four of the nine science teachers said they used an overhead projector monthly or weekly. One-third of the social

Table 5

Percentages of Social Studies Teachers Who Used Certain Materials Offered by Textbook Publishers in a 12-month Period

Publisher-offered materials	Not needed	Needed, but not available	Used less than 10 days	Used between 10 and 50 days	Used more than 50 days
Teacher manuals	0%	0%	11%	11%	78%
Student workbooks	11%	0%	22%	44%	22%
Hands-on or manipulative materials	44%	22%	11%	22%	0%
Audiovisual materials	11%	11%	33%	44%	0%
Activity cards	44%	44%	11%	0%	0%
Test materials	33%	0%	33%	22%	11%

Table 6

Percentages of Science Teachers Who Used Certain Materials Offered by Textbook Publishers in a 12-month Period

Publisher-offered materials	Not needed	Needed, but not available	Used less than 10 days	Used between 10 and 50 days	Used more than 50 days
Teacher manuals	0%	0%	0%	11%	89%
Student workbooks	22%	44%	0%	33%	0%
Hands-on or manipulative materials	11%	56%	0%	22%	11%
Audiovisual materials	11%	0%	33%	56%	0%
Activity cards	11%	56%	22%	11%	0%
Test materials	11%	0%	0%	67%	22%
Microslides (wet and dry)	44%	33%	22%	0%	0%

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Table 7

Social Studies Teachers' Reported Use of Selected Audiovisual Materials and Equipment

Audiovisual materials and equipment	Percentages of Respondents (n = 9)				
	Not needed	Needed, but not available	Less than once per month	At least once per month	At least once per week
Films	78%	0%	0%	22%	0%
Filmstrips	33%	11%	11%	44%	0%
Film loops (8mm)	100%	0%	0%	0%	0%
Audiotapes	44%	11%	22%	22%	0%
Slides	44%	22%	33%	0%	0%
Records	67%	11%	22%	0%	0%
Overhead projectors	33%	0%	33%	11%	22%
Standard television	44%	0%	33%	11%	11%
Closed-circuit television	22%	33%	22%	0%	22%
Videotape recorder/player	0%	0%	22%	67%	11%
Computer	56%	33%	0%	11%	0%
Interactive videodiscs	56%	44%	0%	0%	0%
CD-ROM	33%	67%	0%	0%	0%

Table 8

Science Teachers' Reported Use of Selected Audiovisual Materials and Equipment

Audiovisual materials and equipment	Percentages of respondents (n = 9)				
	Not needed	Needed, but not available	Less than once per month	At least once per month	At least once per week
Films	89%	11%	0%	0%	0%
Filmstrips	33%	22%	22%	22%	0%
Film loops (8mm)	100%	0%	0%	0%	0%
Audiotapes	67%	11%	22%	0%	0%
Slides	33%	44%	22%	0%	0%
Records	100%	0%	0%	0%	0%
Overhead projectors	22%	0%	33%	22%	22%
Standard television	44%	44%	11%	0%	0%
Closed-circuit television	22%	56%	22%	0%	0%
Videotape recorder/player	0%	0%	33%	44%	22%
Computer *	11%	11%	44%	11%	11%
Interactive videodiscs	11%	89%	0%	0%	0%
CD-ROM	22%	78%	0%	0%	0%

* One teacher did not respond to this item.

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studies teachers and two of the nine science teachers used slide pictures, but less than once a month.

Only one of the social studies teachers reported using a computer in a class while six of the nine science teachers said they used one at least occasionally. Library/media specialists indicated there was an average of 16 computers per school, mostly in computer labs. Three-fourths of the librarians said their science teachers used computers in instruction more than four times per month and one-half of them reported that their social studies teachers did.

None of the teachers in this survey used interactive videodiscs or CD-ROM in their classes. Those technologies were not available to them. Most of the teachers did not use either phonograph records or audiotapes in their classes.

We also asked the teachers about their use of other equipment and materials. Their responses are tabulated in Tables 9 and 10.

All of the social studies teachers interviewed used maps, charts, globes, and reference books at least occasionally. Over one-half of the social studies teachers said they used maps, charts, and globes more than 50 days during a 12-month period. Over one-half of them used photographs and/or posters between 10 and 50 days. One-third of them reported using artifacts or models at least 10 days. About three-fourths of the social studies

Table 9

Percentages of Social Studies Teachers Who Used Certain Equipment and Materials in Their Classes During a 12-month Period

Equipment and materials	Not needed	Needed, but not available	Used less than 10 days	Used between 10 and 50 days	Used more than 50 days
Video camera	44%	11%	33%	0%	0%
Artifacts or models	11%	0%	56%	22%	11%
Games or puzzles	11%	11%	33%	44%	0%
Learning kits	44%	22%	33%	0%	0%
Maps, charts, globes	0%	0%	0%	44%	56%
Copies of original documents	11%	11%	56%	22%	0%
Reference books	0%	0%	22%	67%	11%
Paperback books	22%	11%	56%	11%	0%
Photographs, posters	11%	0%	33%	56%	0%

Table 10

Percentages of Science Teachers Who Used Certain Equipment and Materials in Their Classes During a 12-month Period

Equipment and materials	Not needed	Needed, but not available	Used less than 10 days	Used between 10 and 30 days	Used more than 30 days
Computer or computer terminal *	11%	11%	44%	11%	11%
Video camera *	22%	44%	22%	0%	0%
Models	0%	11%	22%	56%	11%
Games or puzzles	0%	0%	33%	56%	11%
Learning kits	11%	33%	11%	44%	0%
Charts or posters	0%	0%	22%	56%	22%
Photographs	22%	11%	44%	22%	0%
Microprojector	44%	56%	0%	0%	0%
Mockup or simulator	33%	67%	0%	0%	0%
Specimens (realia)	0%	0%	44%	33%	22%

* One teacher did not respond to this item.

teachers used games or puzzles and copies of original documents at least occasionally. Two-thirds of them reported at least occasional use of paperback books in their classes. One-third of them said they used a video camera in their classes and one-third used learning kits, but for less than 10 days, each.

All of the science teachers said they had made at least occasional use of models, games or puzzles, charts or posters, and specimens in their classes in a 12-month period. Two-thirds of them used photographs. None of the science teachers used a microprojector or a mockup or simulator in their teaching. Over one-half of them said they needed those items. Only two of the nine science teachers interviewed indicated that they occasionally used a video camera while four of them said they needed access to one.

Nearly all of the teachers in this study used public television material in their classes, but very few of them used material from any other radio or television services. The teachers' responses to questions about use of those services are shown in Tables 11 and 12.

Seven of the nine social studies teachers and eight of the nine science teachers used public television. One social studies teacher and one science teacher said that public television was not available to them. Two of the

Table 11

Percentages of Social Studies Teachers Who Used Certain Television and Radio Services in Their Classes During a 12-month Period

Broadcast services	Not needed	Needed, but not available	Used less than 10 days	Used between 10 and 50 days	Used more than 50 days
Public television	11%	11%	33%	44%	0%
Channel 1	22%	44%	11%	0%	22%
National Public Radio	89%	11%	0%	0%	0%
Discovery Channel	22%	44%	22%	11%	0%
Other	0%	0%	0%	22%	0%

Table 12

Percentages of Science Teachers Who Used Certain Television and Radio Services in Their Classes During a 12-month Period

Broadcast services	Not needed	Needed, but not available	Used less than 10 days	Used between 10 and 50 days	Used more than 50 days
Public television	0%	11%	33%	56%	0%
Channel 1*	22%	56%	11%	0%	0%
National Public Radio *	78%	11%	0%	0%	0%
Discovery Channel	11%	78%	11%	0%	0%
Other	0%	0%	11%	11%	0%

* One teacher did not respond to this item.

social studies teachers used Channel 1 more than 50 days in a 12-month period and another used it less than 10 days. Only one of the science teachers interviewed reported using Channel 1 and that was for less than 10 days in a year. When told what Channel 1 is, four of the social studies teachers and five of the science teachers said they thought they needed it. One-third of the social studies teachers and one of the nine science teachers said they used the Discovery Channel at least occasionally. Four social studies teachers and seven science teachers said the Discovery Channel was needed but not available to them. None of the social studies or science teachers interviewed used National Public Radio in their classes and nearly all of them said it was not needed.

Instructional Support

Teachers' levels of satisfaction with the physical instructional resources available to them are recorded in Tables 13 and 14. Sixty-seven percent of the social studies teachers interviewed expressed dissatisfaction with the availability of equipment (non-consumable, non-perishable items) for their classes and with the amount of money available to purchase supplies on a day-to-day basis. Five of the nine social studies teachers said improvement was needed in storage space for their equipment and supplies. Science teachers were also dissatisfied with the

Table 13

Social Studies Teachers' Satisfaction With Instructional Resources

	Percent of teachers			
	Not relevant to this class	Very good	Satisfactory	Improvement needed
Facilities (building and classroom fixtures)	0%	11%	78%	11%
Equipment (non-consumable, non-perishable items)	0%	11%	22%	67%
Supplies (materials that must continually be replenished)	0%	11%	78%	11%
Money to buy supplies on a day-to-day basis	11%	0%	22%	67%
Storage space for equipment and supplies	0%	11%	33%	56%
Space available for classroom preparation	0%	22%	56%	22%
Space for small groups to work	0%	44%	22%	33%
Availability of laboratory assistants or paraprofessional help	44%	0%	33%	22%

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Table 14

Science Teachers' Satisfaction With Instructional Resources

	Percent of teachers			
	Not relevant to this class	Very good	Satisfactory	Improvement needed
Facilities (building and classroom fixtures)	0%	0%	11%	89%
Equipment (non-consumable, non-perishable items)	0%	22%	22%	56%
Supplies (materials that must continually be replenished)	0%	0%	56%	44%
Money to buy supplies on a day-to-day basis	0%	0%	11%	89%
Storage space for equipment and supplies	0%	11%	0%	89%
Space available for classroom preparation	0%	0%	56%	44%
Space for small groups to work	0%	11%	67%	22%
Availability of laboratory assistants or paraprofessional help	11%	22%	0%	67%

availability of equipment (56%), money to buy supplies on a day-to-day basis (89%), and storage space for equipment and supplies (89%). In addition, eight of the nine science teachers said improvement was needed in the school building and classroom fixtures and two-thirds of them said improvement was needed in the availability of laboratory assistants or paraprofessional help.

Professional Development

We asked the teachers about the usefulness of certain resources to them in obtaining information about new developments in education. Their responses are tabulated in Tables 15 and 16.

State department of education personnel, teacher union meetings, and meetings of professional organizations were deemed not useful by at least two-thirds of both social studies and science teachers. At least two-thirds of the teachers, however, judged other teachers, principals, college courses, local in-service programs, and professional journals to be somewhat or very useful. Three-fourths of the science teachers surveyed indicated that local subject specialists, curriculum coordinators, and media specialists were at least somewhat useful to them in obtaining information about new developments. Five of the nine social studies teachers agreed. Most of the teachers (five social studies, seven science) found federally-sponsored workshops

Table 15

Social Studies Teachers' Perceptions of the Usefulness of Various Resources in Obtaining Information About New Developments in Education

Resources	Percent of teachers		
	Not useful	Somewhat useful	Very useful
Other teachers	0%	44%	56%
Principals	11%	33%	56%
Local subject specialists, coordinators, media specialist	44%	22%	33%
State department of education personnel	67%	33%	0%
College courses	33%	44%	22%
Local in-service programs	0%	67%	33%
Federally-sponsored workshops	56%	11%	33%
Teacher union meetings	78%	11%	11%
Meetings of professional organizations	89%	11%	0%
Journals and other professional publications	11%	67%	22%
Publishers and sales representatives	56%	44%	0%

Table 16

Science Teachers' Perceptions of the Usefulness of Various Resources in Obtaining Information About New Developments in Education

Resources	Percent of teachers		
	Not useful	Somewhat useful	Very useful
Other teachers	22%	44%	33%
Principals	33%	44%	22%
Local subject specialists, coordinators, media specialist	22%	44%	33%
State department of education personnel	67%	22%	11%
College courses	33%	56%	11%
Local in-service programs	33%	44%	22%
Federally-sponsored workshops	78%	0%	22%
Teacher union meetings	89%	0%	11%
Meetings of professional organizations	67%	22%	11%
Journals and other professional publications	22%	44%	33%
Publishers and sales representatives	89%	11%	0%

not useful. Five of the social studies teachers and eight of the science teachers said that publishers and their sales representatives were not useful to them as sources of information about new developments in education.

It should be noted that the "not useful" response in this portion of the study was appropriate when a resource was not available to the teachers. Therefore, it does not necessarily reflect dissatisfaction with the quality of resources actually used by the teachers.

We asked the teachers about their needs for assistance in 12 areas from a social studies or science resource person. The teachers' responses are presented in Tables 17 and 18.

Social studies teachers expressed little need for help from a social studies specialist. Four of them said they received little or no assistance in obtaining information about instructional materials and three indicated they needed more help than they were receiving with obtaining subject matter information.

At least one-third of the science teachers said they, also, needed more assistance with obtaining information about instructional materials and subject matter information. Two thirds of them said they needed more help with implementing a discovery/inquiry approach. Four of the nine science teachers stated that they needed assistance with learning new teaching methods or using manipulative or

Table 17

Social Studies Teachers' Perceived Needs for Assistance From a Social Studies Education Resource Person

Teacher tasks	Percent of respondents		
	Usually do not need assistance	Receive little or no assistance	Receive adequate assistance
Establishing instructional objectives	100%	0%	0%
Lesson planning	89%	11%	0%
Learning new teaching methods	11%	11%	78%
Actually teaching lessons	78%	11%	11%
Obtaining information about instructional materials	11%	44%	44%
Obtaining subject matter information	22%	33%	44%
Implementing discovery/inquiry approach	67%	22%	11%
Using manipulative or hands-on materials	67%	22%	11%
Maintaining equipment	67%	0%	33%
Working with small groups of students	78%	11%	11%
Maintaining discipline	67%	11%	22%
Articulating instruction across grade levels	78%	11%	11%

Table 18

Science Teachers' Perceived Needs for Assistance From a Science Education Resource Person

Teacher tasks	Percent of respondents: Usually do not need assistance	Receive little or no assistance	Receive adequate assistance
Establishing instructional objectives	78%	11%	11%
Lesson planning	89%	11%	0%
Learning new teaching methods	11%	44%	44%
Actually teaching lessons	56%	33%	11%
Obtaining information about instructional materials	22%	33%	44%
Obtaining subject matter information	33%	44%	22%
Implementing discovery/inquiry approach	22%	67%	11%
Using manipulative or hands-on materials	44%	44%	11%
Maintaining equipment	56%	33%	11%
Working with small groups of students	78%	11%	11%
Maintaining discipline	100%	0%	0%
Articulating instruction across grade levels	67%	11%	22%

hands-on materials. One-third of the science teachers expressed a need for help in maintaining equipment.

Purposes in Teaching Social Studies and Science

We asked each teacher the following question: "What is your purpose in teaching social studies (science)?" Most of the teachers, both social studies and science, viewed their purpose as, primarily, one of local, national, and global citizenship. One social studies teacher said, "Students need to feel they are a part of history--that they have a responsibility to act in such a way as to have a future for humanity." The science teachers tended to stress environmental education as a purpose. One of them stated, "It is important for children to understand the world and the universe. Children need to become environmentally aware. They need to learn to take care of the earth for the future."

Some social studies teachers explained their purposes in terms of one or more of the specific disciplines, such as history, geography, or political science. None of the science teachers, however, restricted him or herself to a particular science in giving a rationale for teaching middle grade science.

One teacher expressed negative feelings about his situation and said he was "uncertain" about his purpose in teaching science. "Am I teaching science appreciation," he asked, "or teaching science information?" He seemed

discontented with what he perceived to be the "current public attitude," one that "says teach more science facts because of poor test scores."

Conclusions

Most of the social studies and science teachers in this study said that the purpose of teaching their subject to middle grades students was to enable students to understand the world so they could act upon it. Lecture, discussion, individual assignments, and tests or quizzes were the most frequently employed teaching techniques reported by teachers. High usage of teacher's manuals suggested the continued primacy of the textbook in both science and social studies classes. Techniques that were seldom or never used included programmed instruction, computer-assisted instruction, simulations, role plays, debates, panels, field trips, and guest speakers. The videocassette recorder was the most frequently used piece of instructional media equipment.

Discussion

No one should generalize the results of this small-scale investigation beyond the teachers and schools surveyed. We did not compare our rural sample to any other samples; so it would be inappropriate for us to judge whether the social studies and science experiences provided in these schools was superior to, inferior to, or on a par with experiences provided in other settings, rural, urban,

or suburban. Since we focused on the materials and processes of instruction, rather than on educational outcomes, we can offer no opinion as to the quality of student achievement in the schools we surveyed.

In this study, we found teacher dissatisfaction, especially among science teachers, with the physical resources available for instructional support. Science teachers expressed needs for laboratory equipment and facilities. That is congruent with previous investigations on a national scale (Weiss, 1978, 1987).

We view the teachers' frequent use of videocassettes and public television material positively. It seems consistent with their often-expressed purpose of helping students understand their world. On the other hand, the teachers' limited use of community resources appeared to contradict that goal.

Our data reflect a heavy reliance upon textbooks and the assign-study-recite-test pattern of instruction that has been familiar in American education for generations. How does frequent use of that approach square with the goal of social studies and science education for citizenship? How do learners develop the problem-solving and decision-making skills essential to shaping humanity's future on this planet?

The rural teachers we surveyed indicated they relied most upon each other, and on their principals, local

specialists, local in-service education programs, college courses, and professional journals for their continued professional development. Professional conferences, federally-sponsored workshops, and state department of education personnel played lesser, often negligible, roles in professional growth of both social studies and science teachers. This raises some questions. How might rural teachers such as these be better connected with the current knowledge, teaching methods, curriculum materials, and curriculum organization that are disseminated through state, regional, and national conferences on science or social studies education? What, if any, should be the role of federal and state agencies in providing continuing education opportunities for teachers in rural communities? What are the barriers to participation in such activities by rural teachers?

None of this is to say, however, that any improvement in rural education must come from outside the rural community. The advice of Jonathan Sher (1977) seems worth repeating. He advocated more appropriate curriculums for rural schools--ones that reflect and enhance the "natural advantages of rural communities" (p. 285). He recommended:

1. returning to the rural traditions of individualized instruction and cross-age teaching.

2. making extensive use of the local community as a learning resource for rural children.

> 3. taking advantage of the fact that most rural communities are endowed with natural environments which could be the basis of curricular materials in outdoor education, science, survival skills, physical education, and other related fields. (p. 285)

Perhaps, Sher's vision will come about through the empowerment of rural teachers, more equitable school financing, and increased technological links between rural schools and the rapidly developing information networks. Certainly, there is potential for social studies and science education in rural American settings, although different from what is found in cities and suburbs, to be of as high a quality as anywhere in the nation. Indeed, daring to be different may be the key rural educators need to use in order to improve the quality of rural education.

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